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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/749,201

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Philip Sean Stetson

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TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

SINGH, RAMNANDAN P

ART UNIT

PAPER NUMBER

2614

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/749,201	Applicant(s) STETSON ET AL.	
	Examiner Ramnandan Singh	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Jan 18, 2008 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 7 recites the limitation “ comprising a tuning algorithm that selectively adjusts one variable passive component in the tunable filter” in lines 1-3. The disclosure does not provide any details on the structure of the tuning algorithm (64). For example, the specification states “Fig. 3 schematically illustrates an example hybrid circuit 300 that can be implemented in accordance with an aspect of the present invention. The hybrid circuit 300 comprises a biquad filter 302 in series with a high pass filter 304. This configuration provides two complex zeros, two complex poles, a zero at DC, and two real poles” [Page 8, lines 7-11]. However, the disclosure does not provide expressly the expressions for the two complex zeros, two complex poles, a zero at DC, and two real poles in terms of the biquad filter and the high pass filter components so that the filter components for tuning the hybrid circuit 300 may be adjusted. In essence, the disclosure fails to adequately describe the tuning algorithm (64) as claimed. Claims 8-11 being dependent from claim 7 are also rejected.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 5, 12, 16, 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "substantially" in claim 1 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. A similar thing holds for claims 5, 12, 16, 26 and 27.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-5, 7-8, 11-17, 19-20, 25 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee [US20030012364 A1].

Regarding claim 12, Lee discloses a system shown in Fig. 2, comprising:

means (i.e. hybrid 620) for separating transmit and receive signals at an interface between a central office and a subscriber loop [Fig. 6; Para: 0059];

means for decoding a control signal provided by a control system to generate an output signal having one of a plurality of states, each of the plurality of states corresponding to predetermined loop impedance and line coupling characteristics for a respective associated communications network; and

means (i.e. digital signal processors 280, 270) for selectively tuning the separating means based on the one of states of the output signal to set at least one of at least one pole and at least one zero of the means for separating so as to configure the means for separating to have a frequency response that matches the loop impedance and the line coupling characteristics of the associated communications network to mitigate echo effects of the transmit signal [Figs. 2, 6; Para: 0060-0071; claims 1, 6-10].

Regarding claim 13, Lee further discloses the system, comprising means (270) for selectively adjusting an impedance parameter in the means (620) for separating to provide the frequency response for separating to the means [Fig. 6; Para: 0059-0068].

Regarding claim 14, Lee further discloses the system, the impedance parameter comprising at least one capacitance parameter as shown in the hybrid 620 of Fig. 6 [Para: 0066; 0069].

Regarding claim 15, Lee further discloses the system, the desired frequency response being adaptable to a plurality of predetermined frequency bands associated with the loop impedance and line coupling characteristics [Fig. 6; Para: 0060-0069].

Regarding claim 16, Lee discloses a method, as shown in Fig. 5, comprising

filtering a transmitter signal to provide a filtered transmitter signal having a frequency response $H_2(S)$;

selectively adjusting at least one of at least one pole and at least one zero to set the frequency response based on loop impedance characteristics of an associated subscriber loop [Para: 00556-0057]; and

Combining (i.e. summer 530) the filtered transmitter signal with an aggregate line input signal from the associated communications network to provide a receiver input signal that is substantially free of echo due to the transmitter signal [Fig. 5; Para: 0054-0058].

Regarding claim 1, Lee discloses a system, as shown in Fig. 2, comprising:

a tunable filter (500) driven by an output signal of a transmitter (510) to provide a filtered output signal, the filtered output signal being combined with a signal from an associated communications network to provide a receiver signal that is substantially free from echo caused by the output signal of the transmitter [Fig. 5; Para: 0054]; and

a control system (i.e. DSP 270 or 280) configured to selectively adjust as least one tunable component of the tunable filter to set at least one of at least one zero of a transfer function of the tunable filter so that the transfer function of the tunable filter corresponds to loop characteristics of

the associated communication network [Fig. 5; Para: 0054-0058; Fig. 6; Para: 0059-0071].

Regarding claim 2, Lee further discloses the system, the associated communications network comprising a digital subscriber link [Figs. 1-2; Para: 0027-0036].

Regarding claim 3, Lee further discloses the system, the tunable filter (600) further comprising a hybrid circuit (620) comprising at least one amplifier stage (622) and at least one tunable component located in at least one of a feedback path and a feedforward path of the amplifier stage [Fig. 6].

Regarding claim 4, Lee further discloses the system comprising a line coupling network (220) that provides an interface between the transmitter and the associated communications network .

Regarding claims 5 and 27, the limitations are shown above.

Regarding claim 7, Lee further discloses the system, the control system (DSP 270, 280) further comprising a tuning algorithm (i.e. computer program) that selectively adjusts at least one variable passive component in the tunable filter to provide the tunable filter with a desired frequency response corresponding to loop characteristics of the associated communications network [Figs. 2, 6; Para: 0035; 0038-0046; claims 1, 6-10].

Regarding claim 8, Lee further discloses the system, the at least one variable passive component comprising at least one capacitor [Fig. 6; Para: 0066-0069].

Regarding claim 11, Lee further discloses the system, the tunable filter (600) comprising a biquad filter (i.e. a second-order filter), the at least one variable passive component located in at least one of a feedback path and a feedforward path of the biquad filter [Fig. 6; Para: 0059-0068].

Regarding claim 17, Lee further discloses the method comprising

determining the loop impedance characteristics of the associated communications network [Figs. 2, 6; Para: 0060-0068].

Regarding claims 19, 20 and 25, the limitations are shown above.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 9, 10 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 7 above, and further in view of Grisamore et al [US 6,445,791 B1].

Regarding claim 9, Lee does not teach expressly a switch network.

Grisamore et al teach a switch network coupled to adjust the at least one variable passive component so that the tunable filter achieves the desired frequency response [Figs. 3-5; col. 5, line 53 to col. 7, line 61].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Grisamore et al with Lee in order to further tune up the hybrid circuit to improve the cancellation of the amount of transmit signal present on the receive signal [Grisamore et al ; col. 7, lines 49-61].

Regarding claim 10, Grisamore et al further teach the system comprising a decoder that receives a control signal from the control system and provides an output signal to activate the switch network to set a desired impedance for the at least one variable passive component [col. 3, lines 28-47].

Regarding claim 26, the limitations are shown above.

10. Claims 18, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee applied to claims 16 and 17 above, and further in view of Henrie [US 6,751,202 B1].

Regarding claim 18, Lee does not teach expressly the method determining loop impedance using a test signal.

Henrie teaches a method of determining the loop impedance characteristics by applying a test signal at a transmitter output (i.e. DAA output) comprising the transmitter signal [Fig. 1; col. 3, lines 60-62].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Henrie with Lee in order to correctly set the gain switches to adapt the echo cancellation for the given environment [col. 3, lines 39-41].

Regarding claim 21, the limitations are shown above.

Regarding claim 22, the combination of Lee and Henrie teaches the method, the selectively adjusting further comprises:

setting a tunable parameter that changes the frequency response of a hybrid circuit driven by the transmitter signal [Lee; Figs. 2-6] applying a test signal to an associated communications network and determining the

signal-to-noise ratio of a received signal relative to the transmitter signal
[Henrie; Fig. 1; col. 3, lines 35-62].

Regarding claims 23-24, the limitations are shown above.

Response to Arguments

10. Applicant's arguments filed JAN 18, 2008 have been fully considered but they are not persuasive.

(i) **Applicant's argument**—"This passage clearly states a manner in which the tuning algorithm can be implemented to adjust variable passive components to provide a desired frequency response, as recited in claim 7. In the following paragraph, the Specification provides even more detail about the implementation of the tuning algorithm: "[t]he tuning algorithm 64 can monitor the receiver signal and set the capacitor network 58 to a value that causes the output of the cancellation network 66" on page 10.

Examiner's argument—Examiner respectfully disagrees. The passages of the specification as cited above [page 4, line 30 thru page 55, line 5; page 7, lines 4-23] describe circuits with components for implementing the tuning algorithm. Examiner asserts that these passages

do not provide the details regarding the structure of the tuning algorithm.

“what is the tuning algorithm ?” is not adequately defined. As a result, the 35 USC 112, 1st paragraph rejection, as set forth in this Office action above, is maintained.

(ii) Applicant's argument—“Representative for Applicant respectfully submits that neither Lee nor any of the other cited reference teaches or suggests the combination of structural and functional features recited in claim 1” on page 13.

Examiner's response—Examiner disagrees. The applicant's argument is very broad and has failed to specifically point out which elements of the claim are not supported by the Lee reference and why.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Ramnandan Singh/
Primary Examiner, Art Unit
2614